## REMARKS/ARGUMENTS

Claims 22-24, 27 and 28 are pending in the application.

### Claim Rejections – 35 U.S.C. § 103

Claims 22-24 and 27 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,788,778 to Shang et al. ("Shang") in view of U.S. Patent No. 5,018,479 to Markunas et al. ("Markunas"). Applicants respectfully traverse.

The claimed subject matter is directed toward a method for removing residue from a substrate processing chamber. To accomplish this, the claimed process mixes a flow of reactive radicals and a flow of nonplasma diluent gas anterior to the processing chamber. The nonplasma diluent gas can include at least one of an inert gas or a reduction gas The specification indicates that such a method can increase the number of wafers processed within a chamber more than threefold. *Specification*, pg. 18, ll. 27 – pg. 19, ll. 8.

The office action points to deposition gases in Shang as teaching the claimed nonplasma diluent gas. In response to the arguments found persuasive in the pre-appeal request for review, Markunas has been introduced to somehow convert the deposition gas in Shang into a nonplasma diluent gas by adding hydrogen to the deposition gas. *Final Office Action*, page 3. It is unclear how the introduction of hydrogen changes the deposition gas in Shang into a nonplasma diluent gas as claimed.

The combination of prior art somehow changes the deposition gas in Shang into a gas used for removing residue from a substrate. Shang shows two gas supply systems. The first gas supply system includes the deposition gas 32 pointed to by the office actions. The second gas supply system is used to clean the inside of the processing chamber. *Shang*, col. 4, ll. 32-35. A successful combination of the systems disclosed in Shang and Markunas would result in the first gas supply system of Shang changing into a system for removing residue from a substrate processing chamber. The combined system, therefore, would include two cleaning systems and zero deposition systems. This combined system would result in a system that deposits nothing yet provide cleaning for deposited residues, which does not make sense. Such a combination renders the system shown in Shang inoperable for its intended use.

Furthermore, the claims require mixing of a flow of nonplasma diluent gas with a flow of reactive radicals anterior to the processing chamber. The nonplasma diluent gas can

include a reducing or inert gas. The office action points to a hydrogen reducing gas feed in Markunas as teaching a flow of nonplasma diluent gas. This hydrogen gas feed is shown as callout $18_1$ in FIG. 2 of Markunas and is used to introduce hydrogen directly into the chamber using a gas dispersal ring or inlet 18. This combination would result in a system that mixes the deposition gas 32 with reactive radicals anterior to the chamber, as per Shang, and then this gas-radical mixture would be mixed with hydrogen within the chamber using the proposed hydrogen gas feed $18_1$. Such a combination mixes the nonplasma diluent gas with the radicals within the chamber and not anterior to the chamber as claimed.

Simply put, the cited prior art does not render the claimed method for removing residue from a substrate processing chamber as obvious. In light of these comments and the substantial prosecution history, Applicants would appreciate the speedy allowance of these claims. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,

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